Amendments to the Claims

Claim 1. (Currently amended) A compound of Formula I:

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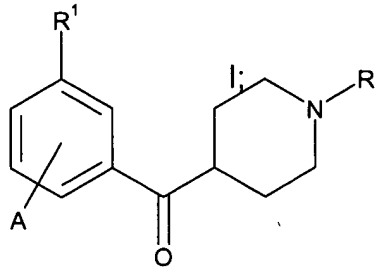


or a pharmaceutical acid addition salt thereof, where;

A is hydrogen, halo, ~~$-OR^4$~~, NH_2 , or $-CF_3$;

R is hydrogen, C_1-C_4 alkyl, C_3-C_6 alkenyl, C_3-C_6 alkynyl, or (C_1-C_6 alkyl)-Ar^1;

R^1 is -NH-R^2-R^3 , ~~hydroxy,~~ or $-OSO_2Ar^2$~~, or NH_2~~;

Ar, Ar^1, Ar^2, Ar^3, and Ar^4 are an optionally substituted phenyl or optionally substituted heteroaryl;

R^2 is -CO-, -CS-, or $-SO_2$-;

R^3 is hydrogen, optionally substituted C_1-C_6 alkyl, Ar^3, $-NR^5R^6$, or OR^5; provided R^3 is not hydrogen if R^2 is either -CS- or $-SO_2$-;

R^4 is hydrogen, optionally substituted C_1-C_6 alkyl, or Ar; and

R^5 and R^6 are independently hydrogen, optionally substituted C_1-C_8 alkyl, or Ar^4;

or R^6 and R^5 combine, together with the nitrogen atom to which they are attached,

to form a pyrrolidine, piperidine, piperazine, 4-substituted piperazine, morpholine or thiomorpholine ring;

wherein substituted phenyl is phenyl mono-substituted with a substituent selected from the group consisting of halo, nitro, cyano, amino, trifluoromethyl, trifluoromethoxy, phenyl, benzoyl, C_1-C_6 alkyl, C_1-C_6 alkoxy, (C_1-C_4 alkyl)$S(O)_n$, (C_1-C_4 alkyl)$_2$ amino, C_1-C_4 acyl, or two or three substituents independently selected from the group consisting of halo, nitro, trifluoromethyl, C_1-C_4 alkyl, and C_1-C_4 alkoxy;

n is 0, 1, or 2;

heteroaryl is an aromatic or benzofused aromatic 5 or 6 membered ring containing from 1 to 3 heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur;

C1

substituted heteroaryl is heteroaryl substituted with up to three substituents selected from the group consisting of halo, cyano, nitro, hydroxy, C_1-C_4 alkoxy, C_1-C_4 alkyl, (C_1-C_4 alkyl)-$S(O)_n$-, and phenyl-$S(O)_n$-;

substituted alkyl is alkyl substituted from 1 to 3 times independently with a substituent selected from the group consisting of halo, hydroxy, phenyl, 2-phenylethylen-1-yl, diphenylmethyl, naphthyl, substituted phenyl, aryloxy, heterocycle, heteroaryloxy, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_8 cycloalkyl, C_1-C_4 alkoxy, C_1-C_4 alkoxycarbonyl, phenyl(C_1-C_4 alkyl), substituted phenyl(C_1-C_4 alkyl), and benzofused C_4-C_8 cycloalkyl; and

heterocycle is aromatic or non-aromatic 5 or 6 membered ring containing from 1 to 3 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur, said ring being optionally benzofused and said ring or benzofused ring being optionally substituted with up to three substituents selected from the groups consisting of halo, C_1-C_4 alkoxy, C_1-C_4 alkyl, cyano, nitro, hydroxy, (C_1-C_4 alkyl)-$S(O)_n$-, and phenyl-$S(O)_n$-.

Claim 2. (Original) The compound of Claim 1 wherein A is hydrogen.

Claim 3. (Previously presented) The compound of Claim1 wherein R is methyl.

Claim 4. (Previously presented) The compound of Claim 1 wherein R^1 is NH-R^2-R^3.

Claim 5. (Previously presented) The compound of Claim 4 wherein R^2 is C=O.

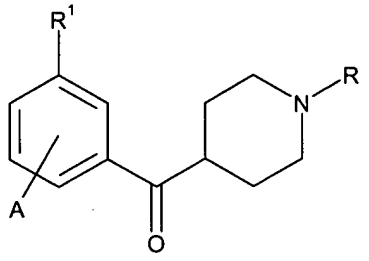
Claim 6. (Previously presented) The compound of Claim 5 wherein R^3 is Ar^3.

Claim 7. (Previously presented) The compound of Claim 6 wherein Ar^3 is 4-fluorophenyl.

Claim 8. (Previously presented) The compound of Claim 7 wherein Ar^3 is 4-fluorophenyl additionally mono- or disubstituted.

Claim 9. (Previously presented) The compound of Claim 8 wherein Ar^3 is selected from the group consisting of 2-iodo-4-fluorophenyl, 2-bromo-4-fluorophenyl, 2-chloro-4-fluorophenyl, 2,4-difluorophenyl, and 2-methyl-4-fluorophenyl, and 2,4,6-trifluorophenyl.

Claim 10. (Currently amended) A pharmaceutical formulation comprising a compound of I:



I;

or a pharmaceutical acid addition salt thereof, where;

A is hydrogen, halo, ~~$-OR^4-$~~, NH_2 , or $-CF_3$;

R is hydrogen, C_1-C_4 alkyl, C_3-C_6 alkenyl, C_3-C_6 alkynyl, or (C_1-C_6 alkyl)-Ar^1;

R^1 is $-NH-R^2-R^3$, ~~hydroxy,~~ or $-OSO_2Ar^2$~~, or NH_2~~;

Ar, Ar^1, Ar^2, Ar^3, and Ar^4 are an optionally substituted phenyl or optionally substituted heteroaryl;

R^2 is -CO-, -CS-, or $-SO_2-$;

R^3 is hydrogen, optionally substituted C_1-C_6 alkyl, Ar^3, $-NR^5R^6$, or OR^5; provided R^3 is not hydrogen if R^2 is either -CS- or $-SO_2-$;

R^4 is hydrogen, optionally substituted C_1-C_6 alkyl, or Ar; and

R^5 and R^6 are independently hydrogen, optionally substituted C_1-C_8 alkyl, or Ar^4;

or R^6 and R^5 combine, together with the nitrogen atom to which they are attached,

to form a pyrrolidine, piperidine, piperazine, 4-substituted piperazine, morpholine or thiomorpholine ring;

wherein substituted phenyl is phenyl mono-substituted with a substituent selected from the group consisting of halo, nitro, cyano, amino, trifluoromethyl, trifluoromethoxy, phenyl, benzoyl, C_1-C_6 alkyl, C_1-C_6 alkoxy, (C_1-C_4 alkyl)$S(O)_n$, (C_1-C_4 alkyl)$_2$ amino, C_1-C_4 acyl, or two or three substituents independently selected from the group consisting of halo, nitro, trifluoromethyl, C_1-C_4 alkyl, and C_1-C_4 alkoxy;

n is 0, 1, or 2;

heteroaryl is an aromatic or benzofused aromatic 5 or 6 membered ring containing from 1 to 3 heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur;

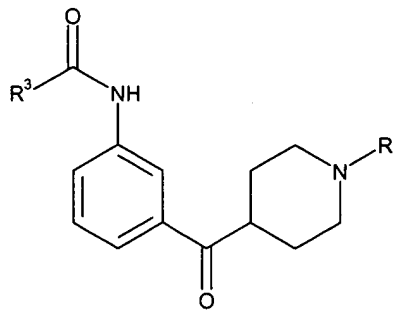
substituted heteroaryl is heteroaryl substituted with up to three substituents selected from the group consisting of halo, cyano, nitro, hydroxy, C_1-C_4 alkoxy, C_1-C_4 alkyl, (C_1-C_4 alkyl)-$S(O)_n$-, and phenyl-$S(O)_n$-;

substituted alkyl is alkyl substituted from 1 to 3 times independently with a substituent selected from the group consisting of halo, hydroxy, phenyl, 2-phenylethylen-1-yl, diphenylmethyl, naphthyl, substituted phenyl, aryloxy, heterocycle, heteroaryloxy, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_8 cycloalkyl, C_1-C_4 alkoxy, C_1-C_4 alkoxycarbonyl, phenyl(C_1-C_4 alkyl), substituted phenyl(C_1-C_4 alkyl), and benzofused C_4-C_8 cycloalkyl; and

heterocycle is aromatic or non-aromatic 5 or 6 membered ring containing from 1 to 3 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur, said ring being optionally benzofused and said ring or benzofused ring being optionally substituted with up to three substituents selected from the groups consisting of halo, C_1-C_4 alkoxy, C_1-C_4 alkyl, cyano, nitro, hydroxy, (C_1-C_4 alkyl)-$S(O)_n$-, and phenyl-$S(O)_n$-.

Claims 11 - 13. (Canceled)

Claim 14. (Previously presented) A process of making the compounds of formula I(a):



I(a)

wherein R^3 is hydrogen, optionally substituted C_1-C_6 alkyl, Ar^3, $-NR^5R^6$, or OR^5;

R^5 and R^6 are independently hydrogen, optionally substituted C_1-C_8 alkyl, or Ar^4; or R^6 and R^5 combine, together with the nitrogen atom to which they are attached, to form a pyrrolidine, piperidine, piperazine, 4-substituted piperazine, morpholine or thiomorpholine ring; and

Ar^3 and Ar^4 are independently an optionally substituted phenyl or optionally substituted heteroaryl;

wherein substituted phenyl is phenyl mono-substituted with a substituent selected from the group consisting of halo, nitro, cyano, amino, trifluoromethyl, trifluoromethoxy, phenyl, benzoyl, C_1-C_6 alkyl, C_1-C_6 alkoxy, (C_1-C_4 alkyl)$S(O)_n$, (C_1-C_4 alkyl)$_2$ amino, C_1-C_4 acyl, or two or three substituents independently selected from the group consisting of halo, nitro, trifluoromethyl, C_1-C_4 alkyl, and C_1-C_4 alkoxy;

n is 0, 1, or 2;

heteroaryl is an aromatic or benzofused aromatic 5 or 6 membered ring containing from 1 to 3 heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur;

substituted heteroaryl is heteroaryl substituted with up to three substituents independently selected from the group consisting of halo, cyano, nitro, hydroxy, C_1-C_4 alkoxy, C_1-C_4 alkyl, (C_1-C_4 alkyl)-$S(O)_n$-, and phenyl-$S(O)_n$-;

substituted alkyl is alkyl substituted from 1 to 3 times independently with a substituent selected from the group consisting of halo, hydroxy, phenyl, 2-phenylethylen-1-yl, diphenylmethyl, naphthyl, substituted phenyl, aryloxy, heterocycle, heteroaryloxy, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_8 cycloalkyl, C_1-C_4 alkoxy, C_1-C_4 alkoxycarbonyl, phenyl(C_1-C_4 alkyl), substituted phenyl(C_1-C_4 alkyl), and benzofused C_4-C_8 cycloalkyl;

heterocycle is aromatic or non-aromatic 5 or 6 membered ring containing from 1 to 3 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur, said ring being optionally benzofused and said ring or benzofused ring being substituted with up to three substituents selected independently from the groups consisting of halo, C_1-C_4 alkoxy, C_1-C_4 alkyl, cyano, nitro, hydroxy, (C_1-C_4 alkyl)-$S(O)_n$-, and phenyl-$S(O)_n$-;

comprising:

(a) protecting 4-benzoylpiperidine hydrochloride to form an N-protected 4-benzoylpiperidine hydrochloride;

(b) nitrating the N-protected 4-benzoylpiperidine hydrochloride to form a mixture of N-protected 4-(mono nitrobenzoyl)piperidines;

(c) deprotecting the N-protected 4-(mononitrobenzoyl)-piperidine mixture to form a mixture of 4-(mononitrobenzoyl)piperidines;

(d) separating the 4-(3-nitrobenzoyl)piperidine from the mixture of 4-(mononitrobenzoyl)piperidines;

(e) reducing the 4-(3-nitrobenzoyl)piperidine to form 4-(3-aminobenzoyl)piperidine; and

(f) acylating the 4-(3-aminobenzoyl)piperidine.

Claim 15. (Original) The process of Claim 14 wherein steps a) and b) are combined.

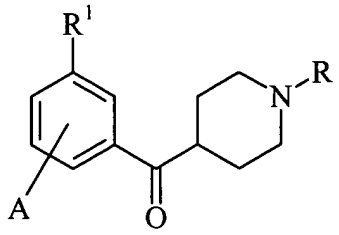
Claim 16. (Previously presented) The process of Claim 14 wherein the source of the protecting group of step a) is trifluoroacetic anhydride.

Claim 17. (Currently amended) The process of Claim 14 wherein the ~~source of the nitronium ion is~~ N-protected 4-benzoylpiperidine hydrochloride is nitrated with ammonium nitrate.

Claim 18. (Currently amended) The process of Claim 16 wherein the ~~source of the nitronium ion is~~ N-protected 4-benzoylpiperidine hydrochloride is nitrated with ammonium nitrate.

Claim 19. (canceled)

Claim 20. (Currently amended) A method for treating migraine in a mammal comprising administering to a mammal in need of such treatment an effective amount of a compound of formula I:



I;

or a pharmaceutical acid addition salt thereof, where;

A is hydrogen, halo, ~~$-OR^4$~~, NH_2 , or $-CF_3$;

R is hydrogen, C_1-C_4 alkyl, C_3-C_6 alkenyl, C_3-C_6 alkynyl, or (C_1-C_6 alkyl)-Ar^1;

R^1 is $-NH-R^2-R^3$, ~~hydroxy,~~ or $-OSO_2Ar^2$~~, or NH_2~~;

Ar, Ar^1, Ar^2, Ar^3, and Ar^4 are an optionally substituted phenyl or optionally substituted heteroaryl;

R^2 is -CO-, -CS-, or $-SO_2-$;

R^3 is hydrogen, optionally substituted C_1-C_6 alkyl, Ar^3, $-NR^5R^6$, or OR^5;

provided R^3 is not hydrogen if R^2 is either -CS- or $-SO_2-$;

R^4 is hydrogen, optionally substituted C_1-C_6 alkyl, or Ar; and

R^5 and R^6 are independently hydrogen, optionally substituted C_1-C_8 alkyl, or Ar^4; or R^6 and R^5 combine, together with the nitrogen atom to which they are attached, to form a pyrrolidine, piperidine, piperazine, 4-substituted piperazine, morpholine or thiomorpholine ring;

wherein substituted phenyl is phenyl mono-substituted with a substituent selected from the group consisting of halo, nitro, cyano, amino, trifluoromethyl, trifluoromethoxy, phenyl, benzoyl, C_1-C_6 alkyl, C_1-C_6 alkoxy, (C_1-C_4 alkyl)$S(O)_n$, (C_1-C_4

alkyl)$_2$ amino, C_1-C_4 acyl, or two or three substituents independently selected from the group consisting of halo, nitro, trifluoromethyl, C_1-C_4 alkyl, and C_1-C_4 alkoxy;

n is 0, 1, or 2;

heteroaryl is an aromatic or benzofused aromatic 5 or 6 membered ring containing from 1 to 3 heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur;

substituted heteroaryl is heteroaryl substituted with up to three substituents selected from the group consisting of halo, cyano, nitro, hydroxy, C_1-C_4 alkoxy, C_1-C_4 alkyl, (C_1-C_4 alkyl)-S(O)$_n$-, and phenyl-S(O)$_n$-;

substituted alkyl is alkyl substituted from 1 to 3 times independently with a substituent selected from the group consisting of halo, hydroxy, phenyl, 2-phenylethylen-1-yl, diphenylmethyl, naphthyl, substituted phenyl, aryloxy, heterocycle, heteroaryloxy, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_8 cycloalkyl, C_1-C_4 alkoxy, C_1-C_4 alkoxycarbonyl, phenyl(C_1-C_4 alkyl), substituted phenyl(C_1-C_4 alkyl), and benzofused C_4-C_8 cycloalkyl; and

heterocycle is aromatic or non-aromatic 5 or 6 membered ring containing from 1 to 3 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur, said ring being optionally benzofused and said ring or benzofused ring being optionally substituted with up to three substituents selected from the groups consisting of halo, C_1-C_4 alkoxy, C_1-C_4 alkyl, cyano, nitro, hydroxy, (C_1-C_4 alkyl)-S(O)$_n$-, and phenyl-S(O)$_n$-.

Claim 21. (Previously presented) The method according to Claim 20 where the mammal is a human.

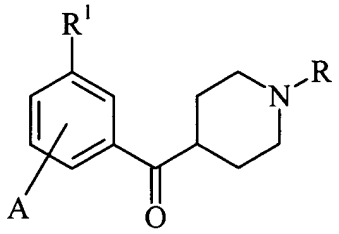
Claim 22. (Previously presented) The compound of Claim 5 where A is hydrogen and R is methyl.

Claim 23. (Previously presented) The compound of Claim 6 where A is hydrogen and R is methyl.

Claim 24. (Previuosly presented) The compound of Claim 7 where A is hydrogen and R is methyl.

Claim 25. (Previously presented) The compound of Claim 6 where R^1 is -NH-R^2-R^3 , R^2 is C=O and R^3 is substituted halophenyl.

Claim 26. (Currently amended) A method for activating 5-HT_{1F} receptors in mammals comprising administering to a mammal in need of such activation an effective amount of a compound of formula I:



I;

or a pharmaceutical acid addition salt thereof, where;

A is hydrogen, halo, ~~$-OR^4$,~~ NH_2 , or $-CF_3$;

R is hydrogen, C_1-C_4 alkyl, C_3-C_6 alkenyl, C_3-C_6 alkynyl, or (C_1-C_6 alkyl)-Ar^1;

R^1 is -NH-R^2-R^3 , ~~hydroxy,~~ or $-OSO_2Ar^2$~~, or NH_2~~;

Ar, Ar^1, Ar^2, Ar^3, and Ar^4 are an optionally substituted phenyl or optionally substituted heteroaryl;

R^2 is -CO-, -CS-, or $-SO_2$-;

R^3 is hydrogen, optionally substituted C_1-C_6 alkyl, Ar^3, $-NR^5R^6$, or OR^5;

provided R^3 is not hydrogen if R^2 is either -CS- or $-SO_2$-;

R^4 is hydrogen, optionally substituted C_1-C_6 alkyl, or Ar; and

R^5 and R^6 are independently hydrogen, optionally substituted C_1-C_8 alkyl, or Ar^4; or R^6 and R^5 combine, together with the nitrogen atom to which they are attached, to form a pyrrolidine, piperidine, piperazine, 4-substituted piperazine, morpholine or thiomorpholine ring;

wherein substituted phenyl is phenyl mono-substituted with a substituent selected from the group consisting of halo, nitro, cyano, amino, trifluoromethyl, trifluoromethoxy, phenyl, benzoyl, C_1-C_6 alkyl, C_1-C_6 alkoxy, (C_1-C_4 alkyl)$S(O)_n$, (C_1-C_4

alkyl)$_2$ amino, C_1-C_4 acyl, or two or three substituents independently selected from the group consisting of halo, nitro, trifluoromethyl, C_1-C_4 alkyl, and C_1-C_4 alkoxy;

n is 0, 1, or 2;

heteroaryl is an aromatic or benzofused aromatic 5 or 6 membered ring containing from 1 to 3 heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur;

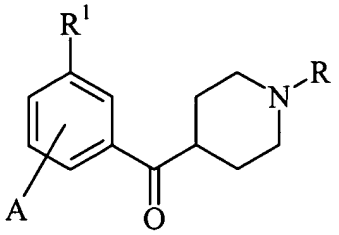
substituted heteroaryl is heteroaryl substituted with up to three substituents selected from the group consisting of halo, cyano, nitro, hydroxy, C_1-C_4 alkoxy, C_1-C_4 alkyl, (C_1-C_4 alkyl)-S(O)$_n$-, and phenyl-S(O)$_n$-;

substituted alkyl is alkyl substituted from 1 to 3 times independently with a substituent selected from the group consisting of halo, hydroxy, phenyl, 2-phenylethylen-1-yl, diphenylmethyl, naphthyl, substituted phenyl, aryloxy, heterocycle, heteroaryloxy, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_8 cycloalkyl, C_1-C_4 alkoxy, C_1-C_4 alkoxycarbonyl, phenyl(C_1-C_4 alkyl), substituted phenyl(C_1-C_4 alkyl), and benzofused C_4-C_8 cycloalkyl; and

heterocycle is aromatic or non-aromatic 5 or 6 membered ring containing from 1 to 3 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur, said ring being optionally benzofused and said ring or benzofused ring being optionally substituted with up to three substituents selected from the groups consisting of halo, C_1-C_4 alkoxy, C_1-C_4 alkyl, cyano, nitro, hydroxy, (C_1-C_4 alkyl)-S(O)$_n$-, and phenyl-S(O)$_n$-.

Claim 27. (Previously presented) The method according to Claim 26 where the mammal is a human.

Claims 28. (Currently amended) A method for inhibiting neuronal protein extravasation comprising administering to a mammal in need of such inhibition an effective amount of a compound of formula I:



I;

or a pharmaceutical acid addition salt thereof, where;

A is hydrogen, halo, ~~$-OR^4$~~, NH_2 , or $-CF_3$;

R is hydrogen, C_1-C_4 alkyl, C_3-C_6 alkenyl, C_3-C_6 alkynyl, or (C_1-C_6 alkyl)-Ar^1;

R^1 is -NH-R^2-R^3 , ~~hydroxy,~~ or $-OSO_2Ar^2$~~, or NH_2~~;

Ar, Ar^1, Ar^2, Ar^3, and Ar^4 are an optionally substituted phenyl or optionally substituted heteroaryl;

R^2 is -CO-, -CS-, or $-SO_2$-;

R^3 is hydrogen, optionally substituted C_1-C_6 alkyl, Ar^3, $-NR^5R^6$, or OR^5;

provided R^3 is not hydrogen if R^2 is either -CS- or $-SO_2$-;

R^4 is hydrogen, optionally substituted C_1-C_6 alkyl, or Ar; and

R^5 and R^6 are independently hydrogen, optionally substituted C_1-C_8 alkyl, or Ar^4; or R^6 and R^5 combine, together with the nitrogen atom to which they are attached, to form a pyrrolidine, piperidine, piperazine, 4-substituted piperazine, morpholine or thiomorpholine ring;

wherein substituted phenyl is phenyl mono-substituted with a substituent selected from the group consisting of halo, nitro, cyano, amino, trifluoromethyl, trifluoromethoxy, phenyl, benzoyl, C_1-C_6 alkyl, C_1-C_6 alkoxy, (C_1-C_4 alkyl)$S(O)_n$, (C_1-C_4 alkyl)$_2$ amino, C_1-C_4 acyl, or two or three substituents independently selected from the group consisting of halo, nitro, trifluoromethyl, C_1-C_4 alkyl, and C_1-C_4 alkoxy;

n is 0, 1, or 2;

heteroaryl is an aromatic or benzofused aromatic 5 or 6 membered ring containing from 1 to 3 heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur;

substituted heteroaryl is heteroaryl substituted with up to three substituents selected from the group consisting of halo, cyano, nitro, hydroxy, C_1-C_4 alkoxy, C_1-C_4 alkyl, (C_1-C_4 alkyl)-$S(O)_n$-, and phenyl-$S(O)_n$-;

substituted alkyl is alkyl substituted from 1 to 3 times independently with a substituent selected from the group consisting of halo, hydroxy, phenyl, 2-phenylethylen-1-yl, diphenylmethyl, naphthyl, substituted phenyl, aryloxy, heterocycle, heteroaryloxy, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_8 cycloalkyl, C_1-C_4 alkoxy, C_1-C_4 alkoxycarbonyl, phenyl(C_1-C_4 alkyl), substituted phenyl(C_1-C_4 alkyl), and benzofused C_4-C_8 cycloalkyl; and

heterocycle is aromatic or non-aromatic 5 or 6 membered ring containing from 1 to 3 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur, said ring being optionally benzofused and said ring or benzofused ring being optionally substituted with up to three substituents selected from the groups consisting of halo, C_1-C_4 alkoxy, C_1-C_4 alkyl, cyano, nitro, hydroxy, (C_1-C_4 alkyl)-$S(O)_n$-, and phenyl-$S(O)_n$-.

Claim 29. (Previously presented) The method according to Claim 28 where the mammal is a human.